

## ROLE OF BMP7 IN ACTIVATION OF RETINAL MICROGLIA

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**Introduction:** The retina, structure inside the eye that converts light to electrical signals, is a multilayered neural tissue, made of neurons and glial cells. The glial cells include Müller glia, astrocytes and microglia; which provide support and maintenance to the retina and act as a surveillance system that become activated during injury and disease. We have previously shown that BMP7 is able to trigger activation of the Müller glia and astrocytes. Here we aim to determine if BMP7 is able to trigger activation of retinal microglial.

**Methods:** Mouse retinal microglia *in vitro* were treated with vehicle controls or BMP7 and known microglia activators interferon gamma (INF- $\gamma$ ) and lipopolysaccharide (LPS). Cells were labeled with DiI following treatments. Images of cells were analyzed using ImageJ/Fiji software for morphological changes in area and number of branches.

**Results:** Cells treated with the positive controls, INF- $\gamma$  and LPS, both showed an increase in cell area in comparison to vehicle-treated microglia. However, cells treated for 3 or 24 hours with LPS showed an increase in the number of branches in addition to the increase in cell area, whereas cells treated with INF- $\gamma$  for 24 hours showed fewer branch numbers in addition to an increase in cell area in comparison to control cells. Microglia treated with BMP7 for 24 hours had a larger cell area and less number of branches compared to the vehicle control.

**Conclusion:** Morphological analysis of microglia, *in vitro*, indicates that BMP7 triggers their activation in a manner similar to that of INF- $\gamma$ . Future studies will compare *in vitro* results to retinas treated with BMP7.

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